

CLAIMS

1. A method comprising:

determining whether at least one sample of a presentation is processed by a first component of a pipeline at an expected time; and

requesting a second component of the pipeline to alter the manner in which the second component processes a portion of the presentation if the sample is not processed at the expected time.
2. A method as recited in claim 1, wherein the first component comprises a media sink.
3. A method as recited in claim 1, wherein the second component comprises a codec.
4. A method as recited in claim 1, wherein the first component comprises a media sink and the second component comprises a codec.
5. A method as recited in claim 1, wherein the portion of the presentation comprises a sample.
6. A method as recited in claim 1, wherein the portion of the presentation comprises a sample other than the at least one sample.

7. A method as recited in claim 1, wherein the portion of the presentation comprises a frame.

8. A method as recited in claim 1, wherein determining whether the at least one sample is processed at the expected time comprises comparing a timing value in the at least one sample to a predetermined time frame associated with the presentation.

9. A method as recited in claim 1, wherein determining whether the at least one sample is processed at the expected time comprises comparing a timing value in the at least one sample to a presentation clock.

10. A method as recited in claim 1, wherein determining whether the at least one sample is processed at the expected time comprises determining whether a timing value in the at least one sample was processed by the first component at the time specified by the timing value.

11. A method as recited in claim 1, wherein determining whether the at least one sample is processed at the expected time comprises determining whether a timing value in the at least one sample was processed by the first component within a given time of a time specified by the timing value.

12. A method as recited in claim 1, wherein the at least one sample comprises a first sample and a second sample and wherein determining whether the at least one sample is processed at the expected time comprises determining if the first sample is processed by the first component at a first expected time and determining if the second sample is processed by the first component at a second expected time.

13. A method as recited in claim 1, wherein the at least one sample comprises a first sample and a second sample and wherein determining whether the at least one sample is processed at the expected time comprises:

determining a first timing error as a difference between a time at which the first sample is processed by the first component and a time at which the first sample is expected to be processed;

determining a second timing error as a difference between a time at which the second sample is processed by the first component and a time at which the first sample is expected to be processed; and

determining if the second timing error is greater than the first timing error.

14. A method as recited in claim 1, wherein the at least one sample comprises a first sample including a first timing value and a second sample including a second timing value and wherein determining whether the at least one sample is processed at the expected time comprises determining whether the first

timing value more closely corresponds to a time at which the first sample is processed by the first component than the second timing value corresponds to a time at which the second sample is processed by the first component.

15. A method as recited in claim 1, wherein altering the manner in which the second component processes a portion of the presentation comprises dropping at least one sample of the presentation.

16. A method as recited in claim 1, wherein altering the manner in which the second component processes a portion of the presentation comprises dropping at least one frame of the presentation.

17. A method as recited in claim 1, wherein the first component is a media sink, the second component is a codec, and the wherein altering the manner in which the second component processes a portion of the presentation comprises dropping at least one frame of the presentation.

18. A method as recited in claim 1, wherein:
the pipeline includes a media source, a media sink, and a topology of media processing nodes;
the first component is a node in the topology; and
the second component is the media sink.

19. A method as recited in claim 1, wherein:

the pipeline includes a media source, a media sink, and a topology of media processing nodes;

the first component is a node in the topology including a codec; and

the second component is the media sink.

20. A method comprising:

determining if timeliness of sample processing in a multi-component pipeline is degrading, the determination being made based on processing times of a first sample and a second sample of a presentation;

altering the manner in which a component in the pipeline processes a portion of the presentation if the timeliness of sample processing is degrading.

21. A method as defined in claim 20, wherein the processing times of the first and the second samples are determined relative to a single component in the pipeline.

22. A method as defined in claim 20, wherein the processing times of the first component is determined relative to a first component in the pipeline and the processing times of the second component is determined relative to a second component in the pipeline.

23. A method as defined in claim 20, wherein the processing times of the first and the second samples are determined using timing information in the samples.

24. A method as defined in claim 20, wherein the processing times of the first and the second samples are determined using timing information in the samples and a presentation clock.

25. A method as defined in claim 20, wherein timeliness of sample processing is determined based on:

a first timing difference between a time specified in a timing value in the first sample and a that time the first sample is processed by a component in the pipeline;

a second timing difference between a time specified by a timing value in the second sample and a time that the second sample is processed by a component in the pipeline.

26. A method as defined in claim 20, wherein timeliness of sample processing is determined based on:

a first timing difference between a time specified in a timing value in the first sample and a time that the first sample is processed by a first component in the pipeline;

a second timing difference between a time specified by a timing value in the second sample and a time that the second sample is processed by second component in the pipeline.

27. A method as defined in claim 20, wherein timeliness of sample processing is determined by:

determining a first timing difference between a time specified in a timing value in the first sample and a time that the first sample is processed by a component in the pipeline;

determining a second timing difference between a time specified by a timing value in the second sample and a time that the second sample is processed by a component in the pipeline, wherein the second sample is processed at a later time than the first sample; and

determining that timeliness of sample processing is degrading if the second timing difference is greater than the first timing difference.

28. A method as defined in claim 20, wherein timeliness of sample processing is determined by:

determining a first timing difference between a time specified in a timing value in the first sample and a time that the first sample is processed by a selected component in the pipeline;

determining a second timing difference between a time specified by a timing value in the second sample and a time the second sample is processed by the selected component, wherein the second sample is processed at a later time than the first sample; and

determining that timeliness of sample processing is degrading if the second timing difference is greater than the first timing difference.

29. A method as defined in claim 20, wherein altering the manner in which a component in the pipeline processes a portion of the presentation comprises instructing the component to drop a sample.

30. A method as defined in claim 20, wherein altering the manner in which a component in the pipeline processes a portion of the presentation comprises instructing the component to drop each sample in a frame of the presentation.

31. A method as defined in claim 20, wherein each component comprises processor executable instructions executed by a processor.

32. A computerized system, comprising:
a plurality of sample processing components operably connected to form a pipeline operable to process samples of a presentation; and
a quality manager that monitors sample processing times in the pipeline and, based on the monitored sample processing times, controls the manner in which at least one of the components processes a portion of the presentation.

33. A computerized system as recited in claim 32, wherein at least one of the sample processing components comprises a media sink, and wherein the quality manager monitors sample processing times at the media sink.

34. A computerized system as recited in claim 32, wherein controlling the manner in which at least one of the components processes a portion of the presentation comprises instructing the component to drop a sample of the presentation.

35. A computerized system as recited in claim 32, wherein controlling the manner in which at least one of the components processes a portion of the presentation comprises instructing the component to drop all of the samples of a frame of the presentation.

36. A computerized system as recited in claim 32, wherein the quality manager controls the manner in which at least one of the components processes a portion of the presentation based on two or more samples of the presentation.

37. A computerized system as recited in claim 32, wherein the quality manager monitors sample processing times at a first component and, based on the monitored sample processing time at the first component, controls the manner in which a second component processes a portion of the presentation.

38. A computerized system as recited in claim 32, wherein the quality manager monitors sample processing times at a sink component and, based on the monitored sample processing time at the sink component, controls the manner in which a codec component processes a portion of the presentation.

39. A computerized system as recited in claim 32, wherein the quality manager monitors the processing times of two samples at a sink component and, based on the monitored sample processing times of the two samples at the sink component, requests that the codec component drop at least one frame of the presentation.

40. A computerized system as recited in claim 32, further comprising a presentation clock associated with the presentation, wherein the quality manager monitors sample processing times in the pipeline relative to the presentation clock.

41. A computerized system as recited in claim 32, further comprising a presentation clock associated with the presentation, wherein a plurality of the samples of the presentation include timing information, and wherein the quality manager monitors sample processing times in the pipeline by comparing the timing information of the samples to the presentation clock.

42. A processor-readable medium having stored thereon processor executable instructions for performing acts comprising:

- determining a timing value associated with a sample of a presentation being processed by a first component in a pipeline;
- determining if the sample is on time by comparing the timing value to a presentation clock associated with the presentation; and
- requesting a second component in the pipeline to drop a sample of the presentation if the sample is not on time.

43. A processor-readable medium as recited in claim 42, wherein the timing value is included in the sample.

44. A processor-readable medium as recited in claim 42, wherein the first component is a sink component.

45. A processor-readable medium as recited in claim 42, wherein the second component is a codec.

46. A processor-readable medium as recited in claim 42, wherein the first component is a sink component and the second component is a codec.

47. A processor-readable medium having stored thereon processor executable instructions for performing acts comprising:

- determining timing information associated with at least two samples of a presentation processed by a first component in a pipeline;
- determining if the sample timing is degrading by comparing the timing information associated with the at least two samples to a presentation clock associated with the presentation; and
- instructing at least one component in the pipeline to alter than manner in which the at least one component processes a portion of the presentation if the sample time is degrading.

48. A processor-readable medium as recited in claim 47, wherein the timing information are included in the samples.

49. A processor-readable medium as recited in claim 42, wherein the first component is a sink component.

50. A processor-readable medium as recited in claim 42, wherein the at least one component is a codec.

51. A processor-readable medium as recited in claim 42, wherein the first component is a sink component and the at least one component is a codec.